373 Immediate effect of expiratory flow increase technique (EFIT) on spirometric parameters of Cystic Fibrosis (CF) patients

C.I.S. Santos[2], M.A.G.O. Ribeiro[2], S.R.M. Paula[2], A.F. Ribeiro[1], A.M. Morcillo[1], J.D. Ribeiro[1]. *Departments of [1]Pediatrics and [2]Physiotherapy, State University of Campinas Medical School, Unicamp, Brazil*

Background: Hypersecretion of viscous infected mucus plugging, mucosal inflammation, bronchoconstriction, airway instability or lung tissue damage in CF patients cause pulmonary obstruction. Although chest physiotherapy techniques are commonly used in CF respiratory diseases treatment, there are no studies evaluating the effect of the expiratory flow increase technique (French technique) on pulmonary function of CF patients.
Aim: to evaluate the immediate effect of the EFIT on spirometric and cardio respiratory parameters in CF patients colonized by *P. aeruginosa* with acute pulmonary exacerbation (APE).
Patients and Methods: A clinical, prospective study including 27 CF patients colonized by *P. aeruginosa* at the CF center of State University of Campinas – School Hospital, Brazil were studied. The patients were submitted to spirometry, SaO_2 measured by pulse oximetry, clinical examination and respiratory physiotherapy (EFIT) immediately before the treatment by intravenous antibiotics (step I). The same procedure was done two weeks later in all patients (step II).
Results: 27 patients (17 females), aged 7–28 years (15±6.07) completed the study. 15 patients were clinically severe by Shwachman Score. The mean values of variables from step I and step II were: oxygen saturation (92.15±6.06 vs 93.74±4.56), inspiratory capacity: (62.19+18.74 vs 64.44+18.66), Slow Vital Capacity (SVC) (63.96+19.90 vs 66.19+25.50) without statistic significance.
Conclusion: The EFIT shows no positive effects on pulmonary ventilation in CF patients with pulmonary exacerbation.

374 Efficacy of physical exercise playing a video game for mucus clearance in patients with Cystic Fibrosis

A. Aquino, E. Balestri, S. Dall'Ara, I. Lami, F. Gobbi, M. Ambroni, A. Miano. *Centro FC Cesena, Italy*

Aims: to determine the efficacy of physical exercise playing a video game session in clearing the mucus from the airways of CF patients, we compared the amount of sputum expectorated after a video game session (PlayStation 2–Eye Toy1) with the amount expectorated after a session Pep-Mask technique.
Methods: 13 clinically stable (FEV1 46–102%) CF patients (7–29 years, 10 M, 3 F) underwent 4 sequences randomly assigned for 4 treatments. Each session lasted 30 minutes and was supervised by the same skilled therapist. Patients were invited to perform the same number of bouts (12) of cough during each session. Pep-Mask procedure was: 4 minutes breathing in sitting position, and during a 3.5 minutes break, the patient was invited to perform 3 bouts of cough followed by expectoration of sputum. Physical exercise procedure was: 4 minutes of video game followed by a 3.5 minutes break with 3 bouts of cough and expectoration of sputum. Each procedure is repeated 4 times. The sputum was collected and weighed. During each session the patient was monitored for heart rate and SaO_2% and requested to draw up the V.A.S. test before and after the session.
Results: see the table.

	Eye Toy	Pep-Mask
Sputum gr*	26.24±9.92	31.56±19.04
Resting SaO_2%**	96.19±1.41	96.73±1.25
Peak SaO_2% desat***	94.92±1.60	95.42±1.58

*p = 0.380,**p = 0.152, ***p = 0.262.

Conclusion: physical exercise performed at a video game is as much effective as Pep-Mask technique. The game was perceived as more fatiguing but also more amusing. It may be used as a substitute or integrative to chest physical therapy. Video games, very popular among young people, are helpful in breaking the boring routine of chest physiotherapy.

375* Aerobic and strength training in patients with Cystic Fibrosis (CF) and severe airway obstruction

M. Donà[1], C. Tartali[1], M. Lanza[2], S. Perobelli[1], E. Zoico[3], A. Borruso[1], A. Zorzanello[1], M. Cornacchia[1], B.M. Assael[1], C. Braggion[1]. *[1]Cystic Fibrosis Center, [2]Faculty of Human Motor Science, [3]Geriatric Department, Verona, Italy*

Little information is available on applicability and effects of a training program in CF patients and severe airway obstruction. The purpose of our study was to assess the effects of a 12 week (4 sessions/week) aerobic and strength training program in CF adults with severe airway obstruction (FEV_1 30±7% pred.). 15/18 patients (age 28±7 yrs, 8 males) completed a supervised training program: each session included 30-min cycling and a 30-min period of strength exercises involving arms and legs. One-repetition maximal tests are weightlifting exercises, which were used to assess strength of biceps (1RMb) and quadriceps (1RMq). Oxygen uptake at exercise peak ($V'O_2$peak) was assessed during a progressive stepwise exercise test on an ergocycle. The effect of training on perceived well-being was investigated too.
A significant increase in $V'O_2$peak (18.3±4.9 vs 20.5±4.6 ml/min/kg, $p < 0.01$), as well as 1RMb (8.3±3.9 vs 11.6±4.6 kg, $p < 0.001$) and 1RMq (55.9±19.1 vs 70.7±19.6, $p < 0.001$) occurred with training. 6-min walking distance improved significantly (649±53 vs 682±66 m, $p < 0.01$) after the training program. Significant improvements in Body Satisfaction Scale-subscores (arms 2.0±0.9 vs 3.2±1.6, thorax 2.7±1.4 vs 3.7±1.2, $p < 0.05$) and in Nottingham Health Profile-subscale "mobility" (13.1±10.6 vs 4.7±7.1, $p < 0.05$) were found.
In conclusion, most patients completed the training program. Significant improvement in exercise capacity and positive psychological effects were achieved with a combination of aerobic and strength training. Therefore it can be proposed as an important component of care in adults with severe lung disease.

376 Functional health status in Cystic Fibrosis

S. Savci[1], D. Inal-Ince[1], M. Ozturk[1], M. Bosnak[1], H. Arikan[1], D. Chan[2], E. Yalcin[3], N. Kiper[3]. *[1]School of Physical Therapy and Rehabilitation, Hacettepe University, Ankara, Turkey; [2]School of Health, Department of Physiotherapy, Saxion Universities of Professional Education, Enschede, Netherlands; [3]Department of Pediatric Pulmonology, Ihsan Dogramaci Children's Hospital, Hacettepe University, Ankara, Turkey*

Aims: The purpose of this study was to investigate the relationship between functional health status, lung function, respiratory and skeletal muscle strength, muscle endurance and functional capacity in patients with cystic fibrosis (CF).
Methods: Fifteen patients with cystic fibrosis, aged 8–18 years (mean FEV_1 = 76.33±26.07%) participated in this study. Pulmonary function test and six-minute walk test were performed. Respiratory and peripheral muscle strength and muscle endurance were measured. The Childhood Health Assessment Questionnaire (CHAQ) with disability index, discomfort index, and health status index subscales was used.
Results: Disability index was significantly related with resting Borg scale score ($r = -0.61$, $p = 0.016$). Discomfort index was significantly related with FEV_1 ($r = -0.69$, $p = 0.004$), FVC ($r = -0.75$, $p = 0.001$), PEF ($r = -0.59$, $p = 0.021$), $FEF_{25-75\%}$ ($r = -0.54$, $p = 0.038$), and resting SpO_2 ($r = -0.89$, $p < 0.0001$). Health status index was significantly related with FEV_1 ($r = -0.57$, $p = 0.031$), FVC ($r = -0.58$, $p = 0.023$), and resting SpO_2 ($r = -0.61$, $p = 0.016$).
Conclusions: Activities of daily living measured using disability index is related to resting dyspnea perception. Discomfort and health status is associated with resting lung function in clinically stable cystic fibrosis.